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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DAVID WILLIAM KOENIG,
JEREMY DAVID PAULSEN, COREY THOMAS CUNNINGHAM, and
REBECCA ANN VONGSA¹

Appeal 2014-009902
Application 13/269,922
Technology Center 1600

Before FRANCISCO C. PRATS, ULRIKE W. JENKS, and
RACHEL H. TOWNSEND, *Administrative Patent Judges*.

PRATS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal under 35 U.S.C. § 134(a) involves claims to a hydrogen peroxide-containing composition that has durable antimicrobial activity. Examiner rejected the claims for obviousness.

We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

¹ Appellants state that the “real party in interest is Kimberly-Clark Worldwide, Inc., the assignee of record.” Br. 1.

STATEMENT OF THE CASE

The following rejections are before us for review:

(1) Claims 1–13, under 35 U.S.C. § 103(a), for obviousness over Scholz,² Hofmann,³ and Kimler⁴ (Final Action 2; Non-Final Action 2–6);⁵ and

(2) Claim 14, under 35 U.S.C. § 103(a), for obviousness over Scholz, Hofmann, Kimler, and Snyder⁶ (Final Action 3–7).

Claim 1, the sole independent claim on appeal, is representative and reads as follows (Br. 10):

1. A composition having durable antimicrobial activity comprising:
 - a carbonate/bicarbonate salt of a quaternary ammonium cation;
 - an organic acid;
 - a surfactant selected from cationic surfactants, non-ionic surfactants, zwitterionic surfactants, and combinations thereof;
 - hydrogen peroxide; and
 - a polymer selected from cationic amine polymer-epichlorohydrin adduct, cationic amine polymer-epichlorohydrin resin, poly(methacrylamidopropyltrimethylammonium) chloride, poly(bis(2-chloroethyl)ether-alt-1,3-bis(dimethylamino)propyl)urea, poly(diallyldimethylammonium) chloride, poly(t-butyl acrylate co-ethyl acrylate co-methacrylic acid), polyethylene oxide, polyquaternium-16, polyquaternium-22, polyquaternium-67, and combinations thereof,wherein the composition is liquid at room temperature,

² Matthew T. Scholz et al., US 2009/0226541 A1 (published Sept. 10, 2009).

³ Gerald R.A. Hofmann et al., US 2010/0240799 A1 (published Sept. 23, 2010).

⁴ Joseph Kimler and Michael Chiang, US 2009/0004287 A1 (published Jan. 1, 2009).

⁵ Final Action entered November 19, 2013; Non-Final Action entered March 19, 2013.

⁶ Marcia Snyder et al., US 2007/0184013 A1 (published Aug. 9, 2007).

wherein the composition comprises from 67% by weight to 98% by weight of a polar carrier solvent.

OBVIOUSNESS

The Examiner's Position

The Examiner cited Scholz as describing a liquid antimicrobial composition containing the organic acid, surfactant, hydrogen peroxide, polymer, and polar solvent required by Appellants' claim 1, as well as a quaternary ammonium salt. Non-Final Action 3–4.

The Examiner found, however, that Scholz differs from claim 1 in that Scholz “does not expressly teach a carbonate/bicarbonate salt of a quaternary ammonium cation.” *Id.* at 4. To address that deficiency, the Examiner cited Hofmann as disclosing, in antimicrobial compositions, the use of certain carbonate/bicarbonate salts of quaternary ammonium compounds as “suitable fast-acting antimicrobial agents.” *Id.* at 5 (quoting Hofmann ¶ 43).

The Examiner also found that, “[w]hile teaching and/or suggesting generally a combination of antimicrobial agents including quaternary ammonium salts and hydrogen peroxide, neither Scholtz [sic] nor Hoffman discloses a specific combination of antimicrobial agents comprising a carbonate/bicarbonate salt of a quaternary ammonium cation and hydrogen peroxide.” *Id.*

The Examiner cited Kimler as evidence of the suitability of combining a carbonate/bicarbonate salt of a quaternary ammonium cation and hydrogen peroxide, and of the stability of that combination of ingredients in an antimicrobial composition. *Id.* at 5–6.

Based on the references' teachings, the Examiner concluded that an ordinary artisan would have considered it obvious to "combine the teachings of Scholtz [sic] and Hofmann because both references teach antibacterial compositions having a broad spectrum of antimicrobial activity comprising quaternary ammonium compounds and polymers that are useful to prevent infections by application of the antibacterial compositions to surfaces."

Non-Final Action 6 (citing *In re Kerkhoven*, 626 F.2d 846, 850 (CCPA 1980) ("It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. . . . [T]he idea of combining them flows logically from their having been individually taught in the prior art.")).

The Examiner reasoned that motivation for combining the references and a reasonable expectation of success would have been found in Hofmann's teaching that ammonium quaternary compounds "are fast-acting antimicrobial agents and that its composition 'is optimized to provide the desired biocidal rates without significant build-up.'" Non-Final Action 6 (quoting Hofmann ¶ 8).

The Examiner reasoned further that an ordinary artisan would have found motivation and a reasonable expectation of success

to incorporate decyloctyldimethylammonium carbonate/bicarbonate with hydrogen peroxide as taught by Hoffman in view of Kimler et al.'s express teaching that such a combination of antimicrobials "make a highly effective disinfectant which is chemically stable and noncorrosive to metals." Para. [0006]. Here, too, such properties would be

desirable in an antimicrobial compositions intended for application to metal catheters.

Id.

Analysis

As stated in *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992):

[T]he examiner bears the initial burden . . . of presenting a *prima facie* case of unpatentability. . . .

After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument.

Appellants' arguments do not persuade us that a preponderance of the evidence fails to support the Examiner's conclusion of obviousness as to representative claim 1.

Appellants contend initially that Scholz does not suggest the combination of ingredients recited in claim 1, because Scholz teaches that its compositions desirably have a high viscosity, of at least 500 centipoise, whereas including water within the range of 67% to 98% recited in claim 1 would yield a composition with a viscosity below that desired by Scholz. Br. 2–3 (citing Scholz ¶¶ 28–20, 315, and 316).

We are not persuaded. Claim 1 does not limit the carrier solvent to water, but instead encompasses 67% to 98% of any “polar carrier solvent.” Br. 10. As the Examiner points out (Non-Final Action 4; Final Action 3–4; Ans. 2), Scholz discloses that, in a preferred embodiment, C1–C4 alcohols may be present in its composition at concentrations up to 90%. *See* Scholz ¶ 240 (“In a preferred embodiment the (C1–C4)alcohols are present in a total amount of no greater than 90 wt-% . . .”).

Appellants do not dispute that Scholz's preferred alcohols are polar carrier solvents encompassed by claim 1. Moreover, we note that the Examiner cited Scholz's Examples 56–58 (Non-Final Action 3–4 (citing Scholz ¶ 445)), each of which contains over 90% water by weight (Scholz ¶ 446 (Table 14)). Thus, irrespective of whether Scholz teaches that its compositions desirably have a high viscosity (which can be provided by a thickener system that claim 1 does not exclude), it nevertheless teaches water could be included in the composition within the range of polar carrier solvent required by claim 1. We are, therefore, not persuaded that Scholz fails to suggest concentrations of a polar carrier encompassed by claim 1.

We acknowledge, but are not persuaded by, Appellants' arguments that hydrogen peroxide would not have been expected to be stable in the presence of a carbonate/bicarbonate salt of a quaternary ammonium cation. *See* Br. 3–5. In particular, we acknowledge Appellants' assertion that they “discovered that the carbonate/bicarbonate salt (anion) of the quaternary ammonium cation is neutralized by the addition of the organic acid to the ‘quaternary ammonium cation’ prior to the addition of the hydrogen peroxide to the ‘quaternary ammonium cation’.” *Id.* at 3.

As the Examiner points out, however, Kimler discloses that “biocidal quaternary ammonium carbonates and bicarbonates, more specifically, benzylalkyl- or dialkyldimethylammonium salts containing either carbonate, bicarbonate, or a combination thereof, as the anion, used in combination with hydrogen peroxide make a highly effective disinfectant *which is chemically stable and non-corrosive to metals.*” Kimler ¶ 7 (emphasis added). Thus, contrary to Appellants' contentions, rather than suggesting that those ingredients would be unstable when combined, the references

cited by the Examiner not only suggest combining them, but also suggest including the resulting combination in antimicrobial compositions, as the Examiner posited.

It might be true, as Appellants argue (Br. 4 (citing Hofmann ¶ 43)), that the chelated peroxide compounds or the pyrophosphate matrix-stabilized peroxides mentioned in Hofmann would not have stabilized peroxide in the presence of carbonate/bicarbonate ions. It might also be true, as Appellants argue (Br. 4–5 (citing Hofmann ¶ 43)) that Hofmann included hydrogen peroxide and n,n-dialkyl-n,n-dimethyl ammonium bicarbonate/carbonate in a longer list of potentially reactive components. Appellants do not explain persuasively, however, how or why those disclosures undercut Kimler's express teaching, noted above, of the desirability of combining hydrogen peroxide with the specific carbonate/bicarbonate quaternary ammonium cations disclosed in that reference, or Kimler's teaching that the resulting product was chemically stable.

Nor do Appellants advance evidence sufficient to undermine Kimler's direct teaching that combining hydrogen peroxide with benzylalkyl- or dialkyldimethylammonium salts containing either carbonate, bicarbonate, or a combination thereof, produces a highly effective and chemically stable disinfectant. To that end, Appellants advance a comparison between Table A (asserted to show the stability of Kimler's compositions) and Table B (asserted to show the stability of compositions encompassed by Appellants' claims). *See* Br. 5–6. Based on the data in the tables, Appellants contend:

The extrapolated Kimler data of Table A demonstrates that a Q:HP [ratio of quaternary ammonium compound to hydrogen peroxide] of 1.5 corresponds to a loss of 24.35% after a one

month exposure to an environmental temperature of 40 [°]C. In stark contrast, the Table B demonstrates that a Q:HP of 1.5 corresponds to a maximum loss of only 2.89%, about eight times less than the decomposition shown by Kimler. Likewise, limited data shows that after a one month exposure to room temperature conditions, Kimler shows at least a 7.17% loss, whereas the present invention shows a 0% loss.

Id. at 6.

Appellants argue that, based on the data shown in Tables A and B, the mixture of the claimed composition “is far more ‘chemically stable’ than Kimler’s. As such, Kimler would not lead one skilled in the art to incorporate decyloctyldimethylammonium carbonate/bicarbonate with hydrogen peroxide because there is no reason to expect that such a combination would be durable enough to kill bacteria for several months.”

Br. 6.

We are not persuaded. We first note that representative claim 1 does not require the claimed compositions to have any particular degree of stability. Thus, that Kimler’s compositions might have exhibited a small loss of hydrogen peroxide activity after one month at room temperature does not demonstrate that compositions having the stability disclosed by Kimler are excluded by claim 1.

Appellants, moreover, do not direct us to any persuasive evidence suggesting that an ordinary artisan would have considered compositions with the stability disclosed in Kimler to be unsuitable for use as antibacterial compositions, or that the stability disclosed in Kimler would be considered unacceptable for antibacterial formulations. Appellants do not, therefore, persuade us that Kimler failed to provide an adequate reason for combining decyloctyldimethylammonium carbonate/bicarbonate with hydrogen

peroxide to produce the highly effective disinfectant taught by Kimler, having the chemical stability also taught in that reference.

Appellants contend that “[i]n light of the cited art, the present invention yields unpredictable results.” Br. 6.

Although we acknowledge that certain embodiments encompassed by Appellants’ claim 1 appear to exhibit a superior retention of hydrogen peroxide over time as compared to Kimler’s compositions, “any superior property must be *unexpected* to be considered as evidence of non-obviousness.” *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1371 (Fed. Cir. 2007). In the present case, we note that the assertion of unpredictability by Appellants’ counsel, quoted above, is the only assertion on the current record that the improvement over Kimler based on the comparison of Tables A and B is unexpected. It is well settled, however, that argument by counsel is not an adequate substitute for evidence regarding a showing of unexpected results. *See In re Geisler*, 116 F.3d 1465, 1470–71 (Fed. Cir. 1997).

In sum, for the reasons discussed, Appellants do not persuade us that the Examiner erred in concluding that the composition recited in representative claim 1 would have been *prima facie* obvious to an ordinary artisan. For the reasons discussed above, Appellants do not persuade us that they have advanced secondary evidence of nonobviousness sufficient to outweigh the evidence of *prima facie* obviousness. Accordingly, we affirm the Examiner’s rejection of claim 1 over Scholz, Hofmann, and Kimler. Because they were not argued separately, claims 2–13 fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

In rejecting claim 14, which depends from claim 1, over Scholz, Hofmann, Kimler, and Snyder, the Examiner relied on Scholz, Hofmann,

and Kimler for the disclosures discussed above, and cited Snyder as evidence that it would have been obvious to use polyquaternium-16 or polyquaternium-22 as the polyquaternium polymer in the antibacterial composition suggested by Scholz and Hofmann. Final Action 3–7.

Appellants contend that, “even if one *arguendo* combined the references cited by the Examiner, there is simply no disclosure that such a combination would be effective in light of the Kimler reference.” Br. 8.

For the reasons discussed above, Appellants do not persuade us that the Kimler reference fails to demonstrate that combining decyloctyldimethylammonium carbonate/bicarbonate with hydrogen peroxide would produce the highly effective disinfectant taught by Kimler, having the chemical stability also taught in that reference. Accordingly, because Appellants’ arguments do not demonstrate, nor do we discern, error in the Examiner’s rejection of claim 14 over Scholz, Hofmann, Kimler, and Snyder, we affirm the Examiner’s obviousness rejection of that claim over those references.

SUMMARY

For the reasons discussed, we affirm the Examiner’s rejection of claims 1–13, under 35 U.S.C. § 103(a), for obviousness over Scholz, Hofmann, and Kimler.

For the reasons discussed, we also affirm the Examiner’s rejection of claim 14, under 35 U.S.C. § 103(a), for obviousness over Scholz, Hofmann, Kimler, and Snyder.

Appeal 2014-009902
Application 13/269,922

TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED